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February 2, 1893. Many learned societies numbered him among their members. He was elected into the National Academy of Sciences in 1872, and was one of the four Honorary Fellows of the American Association for the Advancement of Science. He was admitted in 1875 to our own Academy.

1893. WOLCOTT GIBBS.

JOHN STRONG NEWBERRY.

JOHN STRONG NEWBERRY was descended from several of the noted families of Connecticut. Of these, three, Pitkin, Wolcott, and Newberry, contributed very largely to the conduct of affairs in Colonial times. And there are probably no two families in the United States that have produced as many men of note on the bench, in politics, and in science as have the Pitkin and Wolcott families in the male and female lines of descent.

Dr. Newberry's grandfather, General Roger Newberry, son of Captain Roger Newberry and Elizabeth Newberry, daughter of Governor Roger Wolcott, had acquired a tract of several thousand acres in Ohio. His father, Henry, removed to this land in 1824, where he founded the town of Cuyahoga Falls, and was successful in his enterprises. Dr. Newberry was born in Windsor, Connecticut, December 22, 1822, and was not two years old at the time of this removal.

Professor Newberry was one of the most eminent of the small group of American geologists whose labors span almost the last half of this century, and extend over a wide range in their science. They are — too soon we must say they were — men who, in conducting the great geological reconnoissances throughout the unknown West, or in organizing and executing State geological surveys, became broadly educated in the science which they were helping to build up. Some of them were specialists in one or more departments, but all necessarily became general geologists.

Dr. Newberry's early life was passed under conditions of affluence and intelligent refinement, leaving him free to follow his intellectual bent. Already as a boy he was deeply interested in natural science, and had become familiar with the plants and animals of his State. In collecting the fossil plants of the coal mines near his home, he laid the foundation of what became later perhaps his most important specialty. Both in college and during 1849 and 1850 in Paris he prepared himself to be a physician, receiving his degree from Cleveland Medical College in 1848, and followed that profession for a few years. But while in the Western Reserve College, where he graduated in 1846, his natural bent and the influence of Professor Samuel St. John turned him more and more strongly toward geology; and the lectures of Brongniart in Paris had a dominating influence in turning the current of his effort into palæobotany.

After four years of practice, he abandoned medicine in 1855, and became the Geologist and Botanist of Lieutenant Williamson's expedition to Oregon and California. His report concerning this survey was published in Volume VI. of the Pacific Railroad Reports. While preparing this Report, in 1856 and 1857, Dr. Newberry was Professor of Chemistry and Natural History in the Columbian College at Washington, D. C.

In 1857 he started on the memorable expedition of Lieutenant Ives to explore the Colorado River. This expedition, which occupied the winter of 1857–58, was followed in 1859 by that to the San Juan River, in which Dr. Newberry again acted as Geologist.

While he was finishing his report on the scientific results of these two fruitful expeditions, the course of political events culminated in the outbreak of the war of the Rebellion. He entered at once into the great work of the Sanitary Commission, for which his medical training and his former position as Assistant Surgeon in the Army rendered him peculiarly qualified. He soon became the Secretary of the Western Department of the Commission. It was mainly to his capacity as an organizer and his general and medical scientific training that this important Department owed its success in promptly extending its immense contributions to the prevention and alleviation of suffering among our armies and their prisoners. In his department money and hospital supplies amounting to nearly six millions of dollars were distributed.

After the war, Dr. Newberry resumed his scientific work, and was for a time connected, as a geologist, with the Smithsonian Institution. He was chosen as one of the fifty original members when the National Academy of Sciences was established by the government.

From 1866 until his death, he filled the Chair of Geology and Palæontology in the School of Mines, Columbia College. Here he exerted a strong personal influence upon the students, impressing upon them a lasting interest in his science. It would be difficult to overrate the value of this indirect contribution to the development of our mineral industries.

In 1867 he was President of the American Association for the Advancement of Science. From 1868 until his death he was President of the Lyceum of Natural History, later the New York Academy of Sciences. He was one of the judges at the Centennial Exhibition in 1876. From 1880 to 1890 he was President of the Torrey Botanical Club. In 1884 he was appointed one of the Palæontologists of the United States Geological Survey. In 1887 he was elected an Associate Fellow of our Academy. In 1888 the Murchison Medal was awarded to him by the Geological Society of London, and the following year he was elected First Vice-President of the Geological Society of America.

In 1869, Dr. Newberry was appointed State Geologist of Ohio. To this survey he devoted his energies, both as an administrator and in the field. Aside from his own contributions to the stratigraphy of the State, a large part of the scientific value of the volumes consists in his description of the wonderful fossil Devonian and Carboniferous fishes, and the fossil plants.

He was one of the most highly esteemed members of the Century Club of New York. He was also a member of the original committee appointed by the American Association for the Advancement of Science to call together an International Geological Congress, and he was chosen as President of the Congress for its first meeting in America, at Washington, in 1891. But he was unable either to preside or to be present; the increasing overwork carried on under high pressure for half a century had already ended in paralysis. On December 7, 1892, at New Haven, after nearly two years of illness, he ended a career of great and varied usefulness to his science and to his country.

The range covered by his scientific literary activity is shown by the following classification of his publications given by Professor Fairchild.*

Geology (General)	73
" Economic	38
Palæontology, Vegetable	43
" Animal	25
Botany	7
Zoölogy	6
Physiography	6
Archæology	5
Biography	3
Miscellaneous	5
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* Transactions of the New York Academy of Science, Vol. XII. p. 159.

Dr. Newberry was pre-eminently the pioneer in the geology of the Far West. Intellectually thoroughly equipped in general geology, in palæontology, and palæobotany he first of all saw and interpreted the underlying facts in that great synopsis of the history of our continent. The more elaborate later surveys of the Basin of the Colorado should not overshadow the priority of his wonderful descriptions and illustrations of the great Cañons, and of his correct interpretation of their mode of formation.

His most important contributions to geological literature are in palæobotany and in ichthyic palæontology.

In his description of the fossil plants brought from China by the writer, he was the first to recognize the Jura-Triassic age of an important part of the great coal-producing formation of Asia.

His work in palæobotany extended from the Devonian to the Tertiary; and he was the dominant authority as regards the fossil fishes of American palæozoic and mesozoic times. His more important and larger works on these subjects are "Fossil Fishes and Fossil Plants of the Triassic Rocks of New Jersey and the Connecticut Valley"; "The Palæozoic Fishes of North America," published in 1889 by the United States Geological Survey as Monograph XIV.; and two unpublished memoirs, "The Flora of the Amboy Clays," and "The Later Extinct Flora of North America." His work on the remarkable Devonian Fishes, including the Dinichthys, is printed in Volumes I. and II. of the Reports of the Ohio Survey. He also wrote the Reports on Fossil Fishes for the Illinois Geological Survey.

Dr. Newberry was a geologist in the broadest sense. He kept himself fully abreast with the progress of the science. He was too broadly interested to become really great in any special department. Had he devoted all his energies to either one of his favorite departments, he could easily have attained the first rank. His death emphasizes the fact that the geologists of this order are passing away, to be replaced by specialists. Such men, who, without being specialists, have full general knowledge in all departments,— an education founded upon all the underlying sciences and nurtured by investigation in many directions,— will soon be wanting, to the great loss of the science.

Science had for him no dry facts: all were parts of a history. No one could listen to his lectures or to his conversations on geological subjects, without realizing that he had in his mind a picture in which he saw Nature at her work, and plants and animals as living entities, in their appropriate environment. While his delivery in speaking was not free from a certain mannerism, he held his audience and imbued it with the interest which he felt for his subject.

He was ever ready to leave his work, to give freely his time to all visitors, and advice to those who sought it; and this trait endears his memory to the many pupils and others who profited by his kindness.

He was one of that very small group of American Professors who feel it to be both a duty and a pleasure to maintain a close personal relation with their students, imparting to them an influence that is more far-reaching than their lectures.

1893. RAPHAEL PUMPELLY.

WILLIAM PETIT TROWBRIDGE.

WILLIAM PETIT TROWBRIDGE was born at Strawberry Hill, near Birmingham, Oakland County, Michigan, May 25, 1828. He died suddenly of heart trouble on August 12, 1892. He was married on April 21, 1857, at Savannah, Georgia, to Miss Lucy Parkman. His wife, three sons, and three daughters survive him.

He graduated at the head of his class from the United States Military Academy at West Point in 1848, and during his last year there he acted as Assistant Professor of Chemistry, although he was only nineteen years old. After graduation he became Second Lieutenant of the Engineer Corps, and was ordered to West Point as assistant in the Astronomical Observatory, where he served two years, till 1850. He was then ordered, at his own request, to duty on the Coast Survey, where he remained until 1856, winning his first lieutenancy in 1854. His work on the Coast Survey was as follows. He worked at first upon the triangulation of the coast of Maine, which was placed in his charge in 1852; he also worked along the Appomattox River below Petersburg, and the James River below Richmond, in Virginia, and a part of the time along the Pacific slope; this last occupying him from 1853 to 1856. While in Virginia, he urged the importance of constructing the Dutch Gap Canal, which was actually accomplished during the civil war.

His work on the Pacific slope was tidal and magnetic as well as geodetic, and covered a length of coast of over 1,300 miles. His tidal gauges recorded the earthquake waves emanating from Simoda, Japan, December 23, 1854, two months before information of the oc-